

## REMARKS

By the present communication, the specification has been amended to correct minor typographical errors. The amendment adds no new matter and is supported by the specification as filed. In addition, claims 1, 3, 7, 9, 14, 17, 21, 27, 30, 34, and 36 have been amended to define Applicant's invention with greater particularity. No new matter is introduced by the amendments. The amended claim language is fully supported by the specification and original claims including but not limited to the following.

Claims 1, 14, 27	Paragraphs 33, 36, 38.
Claims 3, 17, 30	Claims 3, 17, 30 respectively as filed.
Claims 7, 21, 34	Claims 7, 21, 34 respectively as filed; paragraph 34.
Claim 9	Claim 9 as filed; paragraph 41.
Claim 36	Claim 36 as filed.

Upon entry of the present amendment, claims 1 through 39 will be pending.

As a preliminary matter, Applicant notes that claim 36 has been amended to properly depend from claim 27. The amendment corrects a typographical error and does not affect the scope of the claim. Claim 36 is therefore entitled to a full range of equivalents.

### I. **Claim Rejections Under 35 U.S.C. § 112, Second Paragraph**

Applicant respectfully traverses the rejection of claims 7, 21, and 34 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for "use of term 'type' . . . as term 'type' does not specifically define the invention of the above claims." Office Action, p. 2, paragraph 2. Although Applicant believes that one of skill in the art would understand the meaning of "type" in the claims at issue, to advance prosecution Applicant has deleted the term from claims 7, 21, and 34. Thus, the claims are clear as written and Applicant respectfully requests withdrawal of this ground of rejection.

The rejection of claim 9 under 35 U.S.C. § 112, second paragraph, as allegedly indefinite is respectfully traversed. The Examiner asserts that the phrase “‘less than about’ renders claims indefinite since it is not clear if the amount of the hydrotrope is less than 15 wt % or about 15 wt %, especially when term about encompasses amounts slightly higher than 15 wt %.” *Id.* Claim 9 as amended recites “about 15 weight percent or less than 15 weight percent.” Applicant respectfully submits that claim 9 is clear as amended. Accordingly Applicant respectfully requests the withdrawal of this ground of rejection.

Applicant respectfully traverses the rejection of claims 13, 26, and 39 as allegedly being indefinite for referring to “chemically modified waxes.” It is well known that the phrase “chemically modified waxes” is a term of art. Such waxes, also known as hard waxes, include hydrocarbon and polyethylene waxes that have been oxidized and, optionally, saponified or esterified. (See, for example, the website of the National Petrochemical and Refiners Association ([www.npra.org/news/facts/waxesqa.cfm](http://www.npra.org/news/facts/waxesqa.cfm)), a copy of which is included for the convenience of the Examiner.) Because the phrase “chemically modified waxes” is well known to and readily understood by those of skill in the art, Applicant respectfully submits that the claims 13, 26, and 39 are clear as written. Reconsideration and withdrawal of this rejection under 35 U.S.C. § 112, second paragraph, are respectfully requested.

## **II. Claim Objections**

Claims 3, 17, and 30 were objected to because “and” was omitted from the Markush group in each claim. The present amendment corrects the omissions and Applicant therefore respectfully requests the withdrawal of the objection.

## **III. Claim Rejections Under 35 U.S.C. § 102.**

The rejection of claims 1-9, 14-22, and 27-35 under 35 U.S.C. § 102(b) as allegedly being anticipated by Chaiko (U.S. Patent No. 6,172,121) is respectfully traversed. Applicant’s invention as defined, for example, by amended claim 1 distinguishes from the cited art by

reciting a method for preparing organoclays that includes the step of adsorbing a sub-monomolecular layer of the polymeric hydrotrope on the clay. Claims 14 and 27 similarly require adsorbing about 0.1 to about 15 percent by weight of the polymeric hydrotrope on the day. Chaiko fails to teach this step.

The process for preparing organoclays disclosed by Chaiko differs substantially from the claimed process. Chaiko is directed to a process that "involves the treatment of impure, or run-of-mine, clay using an aqueous biphasic extraction system to produce a highly dispersed clay, free of mineral impurities and with modified surface properties brought about by adsorption of the water-soluble polymers used in generating the aqueous biphasic extraction system." Chaiko, Abstract. By its nature, the method disclosed by Chaiko exposes the clay to large amounts of polymers and produces organoclays having greater than a sub-monomolecular layer of the polymer on the clay. For example, the organic content of the organoclay produced in Example 1 of Chaiko was 27.7 weight percent. In contrast, claim 1 requires a sub-monomolecular layer of polymeric hydrotrope and claims 14 and 27 require no more than about 15 weight percent of polymeric hydrotrope relative to the weight of the clay. One of ordinary skill in the art would readily appreciate that a polymer loading of 27.7 weight percent is far above that necessary to form a sub-monomolecular layer as recited in claim 1 and its dependent claims and above the 15 weight percent also recited in the present invention. Hence, Chaiko fails to teach each and every element of the claimed methods. Accordingly, reconsideration and withdrawal of this rejection under 35 U.S.C. § 102(b) is respectfully requested.

Claims 1, 2, 5-9, 14, 15, 19-22, 27-29, and 32-35 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Ross (U.S. Patent No. 6,380,295). Applicant respectfully traverses this rejection. The present invention as defined, for example, by claims 1, 14 or 27 distinguishes over Ross by reciting the use of a polymeric hydrotrope having an average molecular weight of 5,000 or less. None of the polymers disclosed by Ross in, for example, Table 1, have an average molecular weight this low. Accordingly, withdrawal of this ground of rejection is respectfully requested.

**IV. Claim Rejections Under 35 U.S.C. § 103(a)**

The rejection of claims 10-13, 23-26, and 36-39 under 35 U.S.C. § 103(a) as allegedly being obvious over Chaiko in view of Ferraro (U.S. Patent No. 5,837,763) or Ross in view of Ferraro is respectfully traversed. As stated in Section 2143 of the MPEP,

to establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claimed limitations.

It is respectfully submitted that the Examiner has not established a prima facie case of obviousness.

Applicant's invention as defined, for example, by amended claim 1 distinguishes over the cited references by reciting a method for preparing organoclays comprising a method for preparing organoclays that includes the steps of:

- (a) dispersing a clay in an aqueous solution comprising a polymeric hydrotrope, wherein the molecular weight of the polymeric hydrotrope is 5,000 or less;
- (b) adsorbing sub-monomolecular layer of the polymeric hydrotrope on the clay; and
- (c) adsorbing an HLB modifying cationic surfactant on the clay.

Claims 14 and 27 are related but recite the step of absorbing from about 0.1 to about 15 percent by weight, relative to the weight of the clay, of the polymeric hydrotrope on to the clay. The cited references simply do not disclose each of these elements.

The claimed process differs fundamentally from the disclosure of the cited references alone or together. The Examiner asserts that “the difference between the present invention and the disclosure of the prior art of Chaiko or Ross is presence of wax and its amounts.” Office Action, p. 6, paragraph 9. It is further asserted that “Ferraro discloses composites of organophilic clay modified with polymeric compound such as PVP or PVA and wax.” *Id.* However, the differences are far greater than this. As discussed above, Chaiko fails to disclose the amount of polymeric hydrotrope claimed in the present invention. Likewise, Ross fails to disclose the use of polymeric hydrotropes having a molecular weight of 5,000 or less. Ferraro fails to cure these deficiencies. Ferraro teaches wax compositions containing an intercalate which lacks the claimed cationic surfactant (i.e., lacks onium cations). (See, for example, col. 6, lines 1-5 and lines 57-60.) Nor does Ferraro teach the use of polymeric hydrotropes having a molecular weight of 5,000 or less. Hence, the combination of cited references fails to teach or suggest every element of the claims.

Moreover, no motivation exists to modify or combine the cited references to produce the methods recited by claims 10-13, 23-26, and 36-39. For example, the biphasic extraction process taught by Chaiko requires large amounts of polymer to form the biphasic system that coats the clay platelets and allows mineral impurities to be sequestered in the aqueous salt layer. See, e.g. Chaiko, Fig. 1 and col. 6, lines 20-65. Excess polymer is in fact washed away from the clay at the end of the process. *Id.*, lines 51-53. Use of less than an excess amount of polymer defeats the very purpose of the invention disclosed by Chaiko, and therefore can not suggest the low amounts of polymer recited in the claimed invention.

Similarly, the disclosure by Ross of high average molecular weight polymers (Table I) teaches away from the use of polymers having an average molecular weight of 5,000 or less. As one skilled in the art will appreciate, many of the high molecular-weight polymers disclosed by Ross will bridge or “crosslink” clay particles (as they are designed to do) under inventive conditions. The use of such high average molecular weight polymers would therefore make the claimed methods inoperable.

Furthermore, Ferraro teaches away from combining or modifying the cited references. Ferraro expressly teaches that the disclosed intercalates are to be formed "without the need for coupling agents or spacing agents such as the onium ion or silane coupling agents." Col. 6, lines 3-5 (see also, col. 6, lines 57-60; and claims 1, 26, 32, and 46). Thus, Ferraro expressly disavows the use of the cationic surfactants required by the present invention. Accordingly, it is respectfully submitted that one of ordinary skill in the art would lack motivation to combine or modify the disclosure of the cited references.

For the reasons stated above, Applicant respectfully submits that a prima facie case of obviousness has not been established. Accordingly reconsideration and withdrawal of the rejections of claims 10-13, 23-26, and 36-39 under 35 U.S.C. § 103(a) are respectfully requested.

#### V. Conclusion

In view of the above amendment and remarks, reconsideration and favorable action on all claims are respectfully requested. If any issues remain to be resolved in view of this response, the Examiner is invited to contact the undersigned at the telephone number set forth below so that a prompt disposition of this application can be achieved.

Respectfully submitted,

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